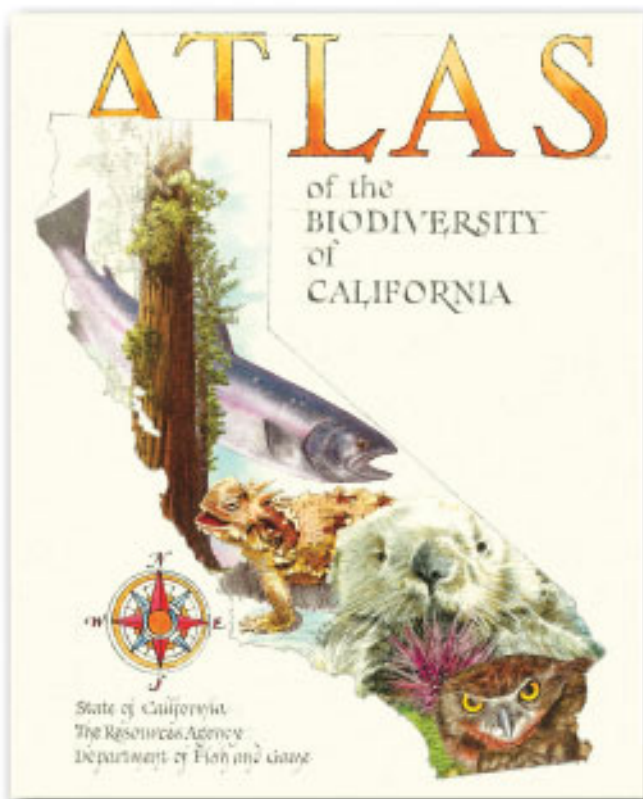


# Mapping the richness of California: The Atlas of Biodiversity of California



Visit [atlas.dfg.ca.gov](http://atlas.dfg.ca.gov) for more information.

How does a state as large and diverse as California set priorities for conservation? Is there a way for Californians to picture important but threatened resources of the state in terms of where they are located on the landscape? How do biologists and conservation planners pull together what they know in order to do this?

Sharing the answers to such questions was a primary reason for creating the first ever *Atlas of the Biodiversity of California*. In this new 112-page volume, the Department of Fish and Game (DFG) presents a definition of biodiversity and illustrates the processes of measuring, identifying, and sustaining it on a statewide level. The atlas features a multitude of full-color maps and photographs; illustrations by well-known wildlife artist Dugald Stermer; text accounts from 27 DFG scientists representing a variety of disciplines; and a comprehensive glossary of geographical, biological, and management terms —

especially useful for educators. DFG focused on presenting California's biodiversity in an easy-to-understand format.

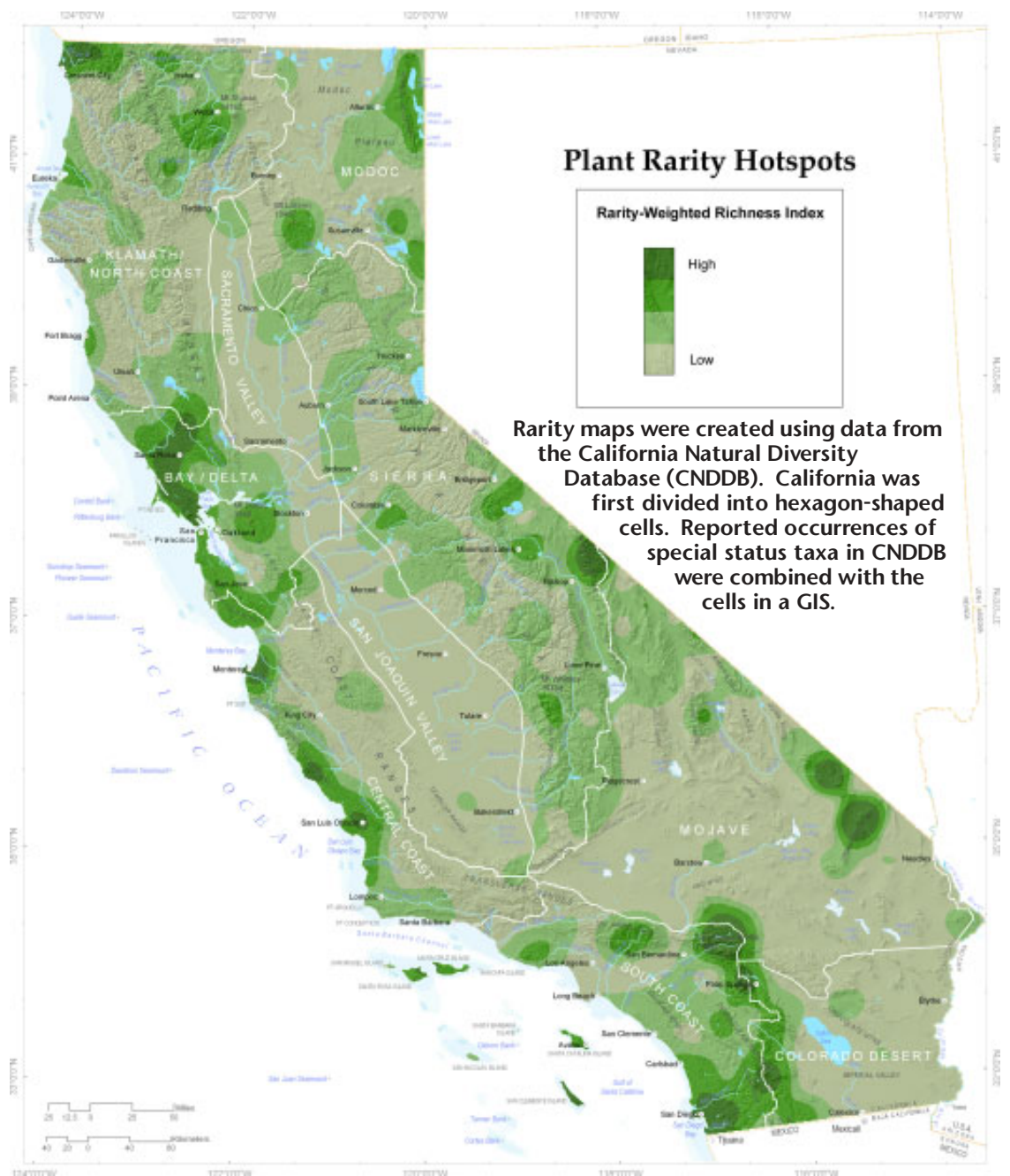
The atlas begins with an introduction to the concepts of biodiversity and the primary methods used to identify and portray areas of high biodiversity in California. One such method is geographic information systems or GIS. This technology allows DFG to combine all of the collected data on a species or a vegetation type from many different sources, analyze it, and visually represent it on a map of the state. For example, data on multiple species or vegetation types may be combined to determine areas of the state with high numbers of unique vegetation types, or wildlife species, or species and subspecies of rare plants.

A chapter of the atlas is devoted to California's remarkable geography, one reason why the state is so rich in unique plants, animals, and vegetation types. California has more

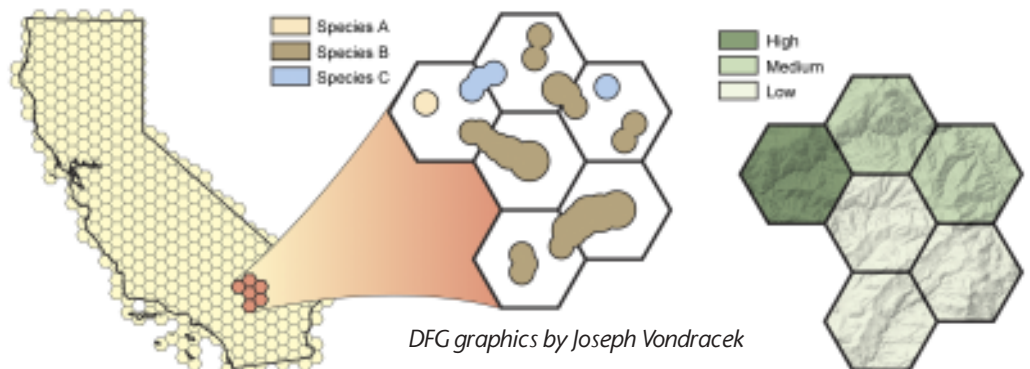
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native species than any other state and is considered to be one of 25 biodiversity “hotspots” worldwide. It has soil types and climate patterns found few other places on earth. California also contains the highest (Mount Whitney at 14,494 feet) and the lowest (Badwater, Death Valley at 282 feet below sea level) points in the contiguous United States, both within 200 miles of the Pacific Ocean.

The largest section of the atlas, “Measures of Biodiversity: Richness, Rarity, and Endemism,” features analyses of richness and rarity based on two statewide biological data sets maintained by DFG. Some of this data DFG has been collecting for more than 20 years. Species richness maps representing amphibians, reptiles, birds, and mammals were created by combining range maps from the California Wildlife Habitat Relationships (CWHR) System. CWHR is an information system and predictive model for



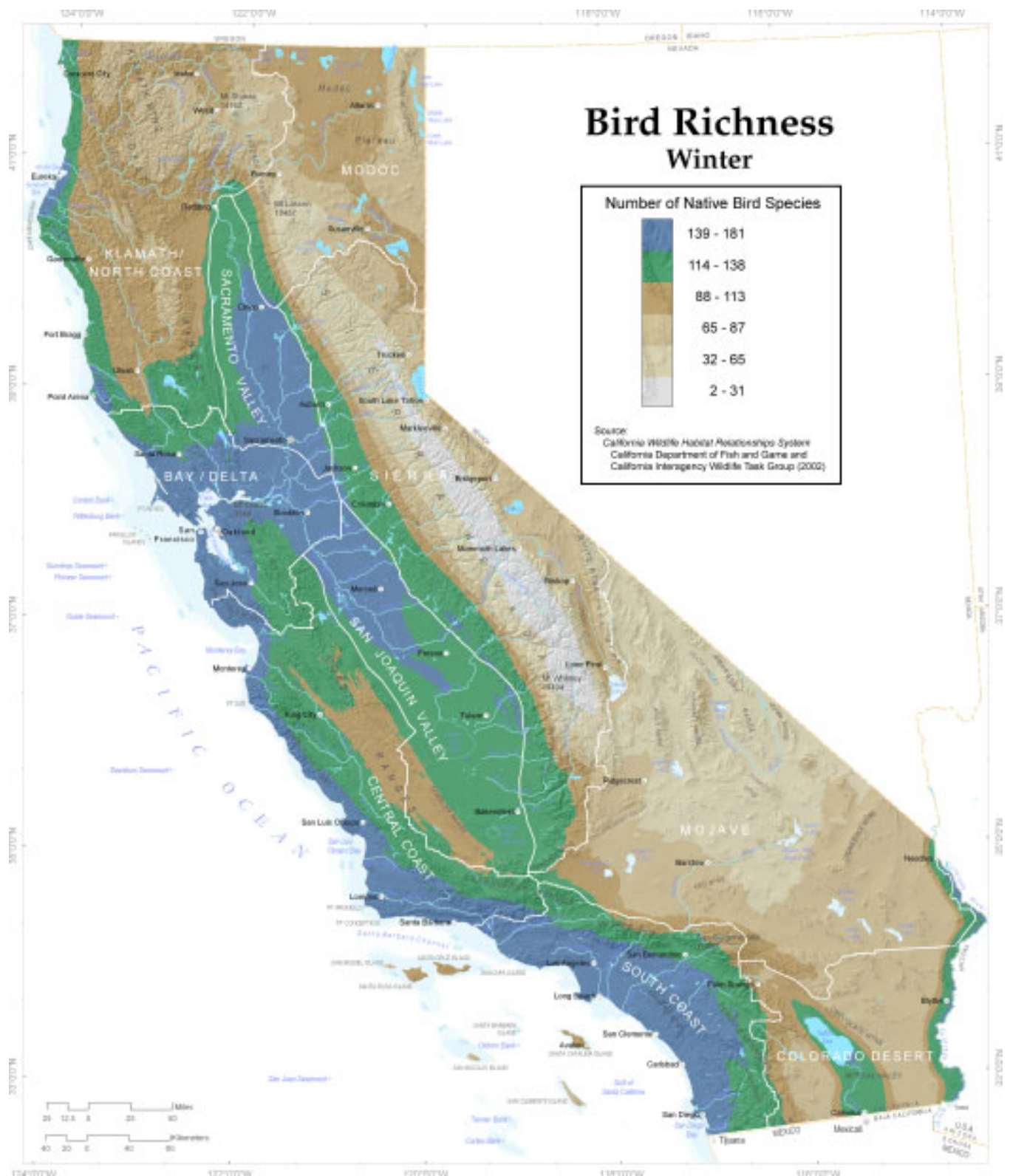
DFG map by Eric Kauffman



DFG graphics by Joseph Vondracek

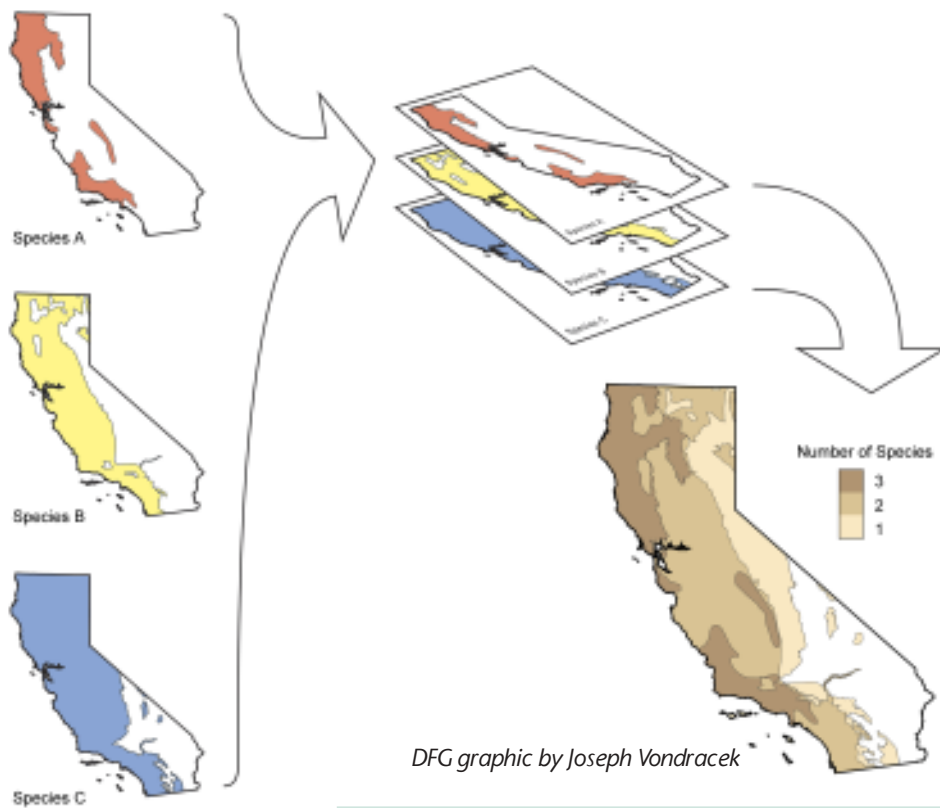
Each species or subspecies was assigned a value in inverse proportion to the number of cells in which it occurred. Here, if this were to represent all occurrences of Species A, B, and C, Species A would have the highest value. The total weighted values of all the taxa in each cell were then summed and the high, medium, and low values displayed on a map.





DFG map by Eric Kauffman

More than 30 data sets were brought together to create the maps in the Atlas of the Biodiversity of California. The analysis of biodiversity was modeled after that contained in *Precious Heritage: The Status of Biodiversity in the United States* (Stein, B.A., L.S. Kutner, and J.S. Adams, editors. The Nature Conservancy and Association for Biodiversity Information. Oxford University Press, Inc. New York, New York. 2000.)



DFG graphic by Joseph Vondracek

Richness maps representing birds, mammals, reptiles, and amphibians were created using data from the California Wildlife Habitat Relationships System (CWHHR). Polygons representing the ranges of all selected species were laid over one another in a GIS. Layers were intersected to create a new set of polygons. Each new polygon shows the number of species whose ranges overlap it.

California's wildlife containing range maps and habitat relationships information on 675 of the state's regularly-occurring species. Rarity maps representing concentrations of high priority special status plants and animals, including fish and invertebrates, were created using occurrence data from the California Natural Diversity Database (CNDDDB). CNDDDB is a statewide inventory of the locations and conditions of the state's rarest plant and animal species and vegetation types. CNDDDB is California's natural heritage program and is part of NatureServe's Natural Heritage Network, a nationwide network of similar programs started by The Nature Conservancy.

In "Samples of Biodiversity: Species and Habitats from throughout California", maps and text accounts show and describe the distribution of resources of national or even international significance for biodiversity. Examples are

coast redwoods, found nowhere else in the world but in northwestern California and southwestern Oregon, and vernal pools, unique seasonal wetlands found extensively in California's Central Valley.

Because the state's biodiversity faces many pressures, a chapter of the atlas is devoted to picturing these potential threats. Many are tied directly or indirectly to California's growing population. The direct loss or fragmentation of habitat, the obstruction of migration corridors for wildlife, the demands on water, and the spread of invasive plants and animals are just a few of the pressures discussed or displayed in this section.

The final section features some of the many public and private coordinated efforts to sustain biodiversity. They include, for example, the Natural Communities Conservation Planning (NCCP) program in Southern California, the six Joint

Ventures devoted to bird conservation throughout the state, and the Fisheries Restoration Grant Program focused on restoring anadromous fish habitat along the coast.

How does a state as large and diverse as California set priorities for conservation and work towards achieving them? The process begins by bringing together what is known about the unique biological resources of the state, defining what is important to conserve, and communicating this to the people who have a stake in California's future. The *Atlas of the Biodiversity of California* is a step in this direction. 🐾

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